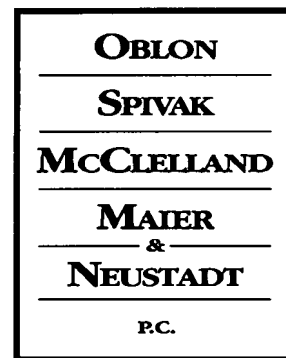




Docket No.: 246980US0DIV

COMMISSIONER FOR PATENTS  
ALEXANDRIA, VIRGINIA 22313



ATTORNEYS AT LAW

RE: Application Serial No.: 10/765,152  
Applicants: Wilfried HEIDE, et al.  
Filing Date: January 28, 2004  
For: CONTINUOUS PRODUCTION OF CROSSLINKED  
FINE PARTICLES OF POLYMER GEL  
Group Art Unit: 1713  
Examiner: EGWIM, K.C.

SIR:

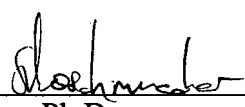
Attached hereto for filing are the following papers:

**Reply Brief**

Our check in the amount of \$0.00 is attached covering any required fees. In the event any variance exists between the amount enclosed and the Patent Office charges for filing the above-noted documents, including any fees required under 37 C.F.R. 1.136 for any necessary Extension of Time to make the filing of the attached documents timely, please charge or credit the difference to our Deposit Account No. 15-0030. Further, if these papers are not considered timely filed, then a petition is hereby made under 37 C.F.R. 1.136 for the necessary extension of time. A duplicate copy of this sheet is enclosed.

Respectfully submitted,

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DOCKET NO: 246980US0DIV



IN THE UNITED STATES PATENT & TRADEMARK OFFICE

IN RE APPLICATION OF :  
WILFRIED HEIDE, ET AL. : EXAMINER: EGWIM, K.  
SERIAL NO: 10/765,152 :  
FILED: JANUARY 28, 2004 : GROUP ART UNIT: 1713  
FOR: CONTINUOUS PRODUCTION OF :  
CROSSLINKED FINE PARTICLES OF  
POLYMER GEL

REPLY BRIEF UNDER 37 C.F.R. §41.41

COMMISSIONER FOR PATENTS  
ALEXANDRIA, VIRGINIA 22313

SIR:

Responsive to the Examiner's Answer of May 18, 2007, Applicants submit the following Reply Brief for consideration by the Board of Patent Appeals and Interferences.

### REMARKS

Applicants submit that the Examiner's Answer to Applicants' Appeal Brief filed on January 8, 2007 improperly maintains the rejections based on the same incorrect reasoning and unsupported assumptions that have characterized the rejection of the claimed invention throughout the prosecution of this application.

For example, independent Claim 10 requires that the copolymerizing of the invention is carried out "...by continuously feeding the aqueous solution of the monomers into a mixing kneader having at least two axially parallel rotating shafts having a plurality of kneading and transporting elements to convey the monomer mixture from an upstream end of the mixing kneader in the axial direction toward a downstream end of the mixing kneader by the continuous conveying action of the transporting elements of the rotating shafts..." The Examiner believes that this feature of the presently claimed invention is disclosed in the prior art, i.e., Tsubakimoto (U.S. 4,625,001). The Examiner asserted that Tsubakimoto discloses a kneading mixer having counter-rotating axial parallel screws/shafts having kneading elements "wherein each shaft would function to, at least to some extent, knead and to transport polymerization mixture" (see page 3, last sentence of the Examiner's Answer). The Examiner supported this assertion by citing to reference numerals 26, 29 and 30 of Figures 4 and 5 of Tsubakimoto (see the first sentence on page 4 of the Examiner's Answer).

The Examiner's reliance on reference numeral 30 as evidence that the claimed invention is anticipated appears for the first time in the Examiner's Answer. The rejection in the Final Office Action of September 1, 2006 did not mention the shaft represented by reference numeral 30 in Figures 4 and 5 of Tsubakimoto.

Regardless that the Examiner now for the first time cites to reference numeral 30 as support for the rejection, Applicants note that reference numeral 30, identified as "a double-

paddle feeder 30" (column 5, lines 42-43 of Tsubakimoto) is nowhere disclosed to be parallel with the discharge screw 29 or the stirring shafts 26.

The Examiner's reliance on Tsubakimoto's disclosure of a double-paddle feeder as evidence that the presently claimed invention is anticipated is incorrect at least because there is no evidence that the double-paddle feeder 30 is parallel to any other shaft of the Tsubakimoto mixing kneader.

With regard to the rotary stirring shaft 26 and the discharge screw 29, the Examiner asserted that these elements of the Tsubakimoto mixing kneader are counter-rotating axial parallel screws/shafts with kneading elements that would function to at least some extent to knead and transport any polymerization mixture. Alternately, the Examiner stated that the rotary stirring shaft 26 and the discharge screw 29 would "clearly also function to convey the mixture towards the downstream direction and the discharge" (see the second to the last sentence on page 5 of the Examiner's Answer).

The Examiner's assertion in this regard is in direct contradiction to the description of the rotary stirring shafts provided in Tsubakimoto. The rotary stirring shafts 26 are "mutually parallel rotary stirring shafts" (see column 5, line 34 of Tsubakimoto). The Examiner provided no explanation whatsoever how a rotary stirring shaft will function to convey a monomer mixture from an upstream end of the Tsubakimoto device to a downstream end by continuous a conveying action.

There is simply no evidence of record to support the Examiner's position in this regard and, contrary to the Examiner's assertion, the rotary stirring shafts 26 are described to have a different function; namely, stirring. Notwithstanding the Examiner's assertions' the rotary stirring shafts of Tsubakimoto are nowhere described to provide a transporting function.

The Examiner's basis for rejecting the claims is therefore defective for at least a first reason because Tsubakimoto does not disclose a device meeting the requirements of the mixing kneader of the present claims. The Examiner's Answer is silent with respect to the issue whether there is any evidence of record showing that the rotary stirring shafts of Tsubakimoto can function to convey a mixture from an upstream end to a downstream end of a mixing kneader.

The rejection is therefore unsupportable at least because (1) the lack of any objective evidence supporting the Examiner's characterization of the prior art mixing device, and (2) the Examiner's incorrect and contradictory characterization of the functionality of the Tsubakimoto rotary stirring shafts in view of the plain description as "stirring" components.

#### Claims 10 and 26

With regard to the limitations of Claims 10 and 26, Applicants submit that the device of Tsubakimoto does not disclose two axially parallel rotating shafts having a plurality of kneading and transporting elements.

In the grounds of rejection provided on page 3 of the Examiner's Answer it appears that the Examiner asserted that the two counter-rotating axial parallel screws/shafts of Tsubakimoto have kneading elements. With regard to the requirement in Claim 26 that the axially parallel rotating shafts of the claimed invention comprise a combination of kneading and transporting elements, the Examiner cited to column 5, lines 28-58 and Figures 4 and 5 as evidence that the prior art anticipates the claimed invention.

Applicants submit that the disclosure cited by the Examiner in support of the rejection does not disclose a mixing kneader having two axially parallel rotating shafts having a plurality of kneading and transport elements or a combination of kneading and transporting elements as claimed in present Claims 10 and 26. The rotary stirring shafts 26 in Figure 5 of

Tsubakimoto have only a single element screw (i.e., a screw that has only a single flight feature). As already discussed above, this feature of the rotary stirring shafts 26 is described by Tsubakimoto as functioning to provide stirring. Tsubakimoto does not disclose that the rotary stirring shafts have multiple flights (e.g., is a screw having more than a single turn) or functions in any manner other than to provide stirring. Like the rotary stirring shafts 26, the discharge screw is nowhere described to include a combination of mixing and transporting elements.

Applicants thus submit that the Tsubakimoto patent does not disclose any mixing kneader having at least two axially parallel rotating shafts having a plurality of kneading and transporting elements, or a combination of kneading and transporting elements. Again, the Examiner has asserted that the prior art of record exhibits structural features that are not in fact disclosed or suggested in the prior art. The rejection of Claims 10 and 26 is therefore not supportable on the grounds of record and the rejection should be withdrawn.

#### Claim 24

Applicants previously argued that Tsubakimoto does not disclose any mixing kneader wherein "no heat is removed via cooling of the reactor walls" (see page 5 of the Appeal Brief filed on January 8). The Examiner's Answer stated that Tsubakimoto describes a desirable embodiment wherein the heat of the polymerization reaction is at least partially removed with a cooling jacket. The Examiner then turned this contradictory disclosure of Tsubakimoto into evidence that the claimed invention is disclosed in the prior art. This simply makes no sense. In the absence of evidence of inherency, anticipation cannot be proven when the prior art is silent with respect to a feature of a claimed invention. Here, the Examiner argued that the claimed invention is anticipated because Tsubakimoto discloses a feature that is in contradiction to the claimed invention. The Examiner provided no explanation of how the

contradictory prior art teaching is in any way equivalent to the exclusion required by Claim 24. The rejection is unsupportable in view of the explicit disclosure of Tsubakimoto and should be withdrawn.

#### Claims 27-29

Claims 27-29 recite requirements that the rotating shafts have a particular elements such as disk segments, close-clearance mixing bars, and L-shaped or U-shaped attachments. The Examiner is of the opinion that these elements are disclosed in Figures 2, 3 and 6 of Tsubakimoto.

The elements disclosed in Figure 2 of Tsubakimoto are explicitly described as "sigma type stirring blades" (column 4, lines 53-54). The elements of Figure 3 of Tsubakimoto are explicitly described as "paddle-shaped veins" (column 4, lines 62-67). Moreover, the elements of Figures 2 and 3 of Tsubakimoto are a part of the reaction vessel of Figure 1 and are nowhere described as elements of the reaction vessel of Figures 4 or 5. The reaction vessel of Figure 1 of Tsubakimoto does not meet the present claim limitation that the monomer or polymer mixture is conveyed axially from an upstream end to a downstream end. The Examiner's reliance on Figures 2 and 3 as evidence that the inventions of Claims 27-29 are anticipated appears to ignore this fact.

Contrary to the Examiner's opinion, Tsubakimoto discloses that the prior art rotary stirring shafts may have "sigma type, S type, Banbury type and fish-tail type" elements (column 4, lines 11-14). Nowhere in the Tsubakimoto patent are the axially parallel rotating shafts of present Claims 27-29 disclosed. The rejection is therefore not supportable and should be withdrawn.

Claims 30-32

The Examiner conceded that Tsubakimoto does not contain any specific example disclosing the retention times recited in present Claims 30-32. The Examiner asserted that it would be reasonable to assume that the retention times of the prior art process would be the same as the retention times recited in Claims 30-32. However, as explained on pages 8 and 9 of the Appeal Brief, Tsubakimoto discloses processes having a retention time substantially longer than the retention times recited in Claims 30-32.

For example, the retention time of Example 1 of Tsubakimoto appears to be at least 50 minutes (see the paragraph bridging pages 8 and 9 of the Appeal Brief). The substantially shorter residence times of Claims 30-32, i.e., less than 30 minutes, less than 20 minutes, and less than 10 minutes, respectively, are not disclosed or suggested by Tsubakimoto and the rejection should therefore be withdrawn.

The short residence times recited in Claims 30-32 are a feature of the claimed invention reflective of the substantial differences between the claimed invention and the prior art. As already stated above, Tsubakimoto discloses a reaction vessel having two rotating stirring shafts identified by reference numeral 26 in Figures 4 and 5. The function of the rotary stirring shafts 26 of Figures 4 and 5 of Tsubakimoto is to stir, not convey, the prior art mixture. Any mixture present in the reaction vessel of Figures 4 and 5 will necessarily have a longer residence time than any corresponding mixture present in the mixing kneader of the claimed invention because the claimed invention has conveying shafts where Tsubakimoto has stirring shafts. Any assertion that the residence times of Claims 30-32 are disclosed or suggested by Tsubakimoto makes no sense in view of the fact that the mixture of Tsubakimoto must undergo a mixing step using stirring shafts which would necessarily delay any transport of the mixture through the prior art reaction vessel (e.g., any transport by the discharge screw 29).



Claims 16-23 & 33-35

With regard to the rejections of Claims 16-23 and 33-35, Applicants draw the Board's attention to the arguments of record in the Appeal Brief.

For the reasons discussed above in detail responsive to the Examiner's Answer, Applicants submit that the rejections of the present claims are not supportable and therefore the rejection should be withdrawn and the claims allowed.

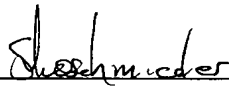
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